

It is therefore possible that gold, under certain circumstances, may, by the presence of silica in solution, become disposed to combine with oxygen, and then to form with the silica a silicate of gold.

If further experiments prove that alkaline silicates favour the solubility of silicate of gold, this silica theory will be open to but few objections, and the difficulties to impede our progress in solving this most interesting problem in chemical geology will be greatly diminished, as it will not require the presence of strong chemical agents, which are not to be found either in the rocks, or in the meteoric waters percolating through them.

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ART. VI.—*Aneroid Barometers, and the Methods of Obtaining their Errors.* By MR. R. L. J. ELLERY, President.

[Abstract, Read 11th May, 1868.]

In this paper the President referred principally to the construction, mode of using, and the correction of errors of aneroid barometers. He pointed out the great utility of these, both as scientific instruments and domestic weather-glasses, as well as of their great value as marine barometers. He drew attention to the absurdity of the ordinary printed words on barometers, as being quite inapplicable, at all events to this climate, and stated that the point marked "stormy," namely twenty-eight inches, was seldom or never reached in these latitudes, and that our most violent storms occurred with a much higher barometer. He then gave the following series of directions, for the guidance of those using the barometers as a weather-glass in Melbourne and its neighbourhood:

It should always be remembered that the barometer foretells *coming* weather rather than indicates weather that is *present*; that the longer the time between the signs and the change foretold by them the longer such altered weather will last; and on the contrary, the less the time between a warning and a change the shorter will be the continuance of such predicted weather. If a barometer is about at its ordinary height—near thirty inches at the sea level—and is steady or rising while the thermometer falls, S.W., S., and S.E. winds may be expected. On the contrary, if a fall takes place with a rising thermometer, wind and

rain may be expected from the N.E., N., and N.W. Exceptions to these rules occur when southerly winds with rain and hail are impending, before which a barometer often rises on account of the direction of the coming wind alone. When the barometer is rather below its ordinary height, say down to 29½ in. at the sea level, a rise may foretell less wind, or a change in its direction towards the south, or less wet; but when it has been very low, say about 29 in., the first rising usually indicates strong wind, at times heavy squalls, from S.W., S., or S.E.; after which a gradually rising glass foretells improving weather, if the thermometer falls; but if warmth continue, the wind will probably back, and more N. or N.W. wind will follow, especially if the rise of the barometer has been sudden, and considerable, or if it is unsteady. The heaviest southerly gales happen soon after the barometer first rises from a very low point. Indications of approaching change of weather and direction and force of wind are shown much less by the height of the barometer than by its falling or rising, but a height of more than thirty inches at the sea-level is indicative of fine weather and moderate winds, except from S.E. occasionally, whence it may blow strongly with a high barometer. A rapid rise of the barometer indicates unsettled weather, a slow movement of some duration the contrary, as does likewise a steady barometer. A rapid and considerable fall is a sign of stormy weather and rain; alternate rising and sinking, or oscillation, always indicates unsettled disagreeable weather. The greatest depressions of the barometer are with gales from the N.E., N., or N.W.; the greatest elevations with wind from S.W., S., or S.E., or with calms. Though the barometer generally falls for a northerly and rises for a southerly wind, the contrary sometimes occurs, in which case the northerly wind is generally fine with dry weather, and the southerly wind violent with rain and hail. A barometer begins to rise considerably before the conclusion of a gale, sometimes even at its commencement. It falls lowest before high winds, but frequently sinks very much before heavy rain. Instances of fine weather with a low barometer occur, but they are always preludes to a duration of wind or rain, if not both. Sometimes severe weather from the northward of short duration may cause no great fall, because followed by a duration of wind from the southward; and sometimes the barometer may fall with southerly winds and fine weather, apparently against these rules, because a

continuance of northerly winds is about to follow. A very high barometer and comparatively low temperature is generally followed by a gentle breeze from S.E., except in summer, when the wind may be fierce from that quarter; with the barometer falling rapidly, the wind will veer round to N.E., and N., accompanied in winter by rain, fog, or dew, and increasing in force; in summer generally a hot wind will set in; unsteadiness in the barometer indicates the shifting of the wind to N.W., in which quarter the barometer is then lowest; after this, with a rapid rising barometer, the wind will shift to W., W.S.W., and S.W., accompanied generally with heavy rain and thunder and lightning; with a still rising barometer the wind decreases in force, inclining towards south, until it has again reached its maximum in S.E. Whenever it blows from N.N.W. or N.W., the barometer, if still falling, should be frequently observed, and as soon as it becomes steady, and the wind is apparently lulling, the shifting of the wind towards S.W. may be expected, which usually takes place with great violence. Gales from S.E. are frequent in summer, and generally commence with a high barometer and light variable winds and calms; towards the height of the gale the barometer falls but slightly, and the wind is then gradually dying away. A steadily falling barometer, with fine weather and light winds from N.N.E. after such a gale, is generally followed by heavy westerly squalls, with much rain and hailstones.

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ART. VII.—*An Improved Method of Preserving Wines, Spirits, &c.* By A. K. SMITH, ESQ.

[Read 28th May, 1868.]

MR. PRESIDENT AND GENTLEMEN,

The subject of my paper this evening bears chiefly upon a colonial industry of rapidly increasing importance, namely, the manufacture and preservation of wine; but the principle to which I have now to direct your attention may be applied with beneficial results to the preservation of any other liquids in the cellar or on draught, so far as preventing contact with the external air, where such contact is liable to injure the quality of the liquid.

My knowledge of the manufacture of wine is but limited, and at most, theoretical. Having been informed, however,